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Attorneys for Plaintiff
NEXTEC APPLICATIONS, INC.

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

NEXTEC APPLICATIONS, INC., a
Georgia corporation,

Plaintiff,

v.

BROOKWOOD COMPANIES, INC., a
Delaware corporation,

Defendant.

Case No. 07CV6901 (RJH)(THK)

**DECLARATION OF DR. CHRISTINE
COLE IN SUPPORT OF PLAINTIFF'S
OPPOSITION TO BROOKWOOD'S
RENEWED MOTION FOR
SUMMARY JUDGMENT OF
INVALIDITY OF U.S. PATENT NO.
5,954,902.**

DECLARATION OF CHRISTINE COLE

I, Christine Cole, say and declare:

1. I am a Professor Emerita of Materials Science and Engineering at Clemson University. My areas of research include textiles. Clemson's School of Materials Science and Engineering ("MSE") is one of the nation's leading institutions for the understanding, characterization, and development of new technologies necessary for the processing and manufacturing of different materials and related products. MSE's primary concentrations include textiles, materials science and engineering, fiber science, and polymer science. In 1987, I helped found Clemson Apparel Research ("CAR") at Clemson University, and have served continuously as the Director of CAR ever since. I am also a named inventor on several issued patents and pending patent application. Nextec has engaged me as a technical expert in this case and as a result I am very familiar with the Nextec patents asserted in this case. I make the following statements of my own personal knowledge (except for those stated upon information and belief) and would and could testify thereto if sworn as a witness at trial.

2. I have reviewed the specifications of United States Patent Application 167,630 (the "'630 Application") and United States Patent Nos. 5,004,643 (the "'643 Patent"), 5,209,965 (the "'965 Patent"), 5,418,051 (the "'051 Patent"), 5,876,792 (the "'792 Patent"); 5,869,172 (the "'172 Patent"), 5,874,164 (the "'164 Patent"), and 5,954,902 (the "'902 Patent"). I have also reviewed many technical publications related to the use of coating compositions in the field of fabric coating. And I have testified extensively as Nextec's technical expert witness on the patents at issue and on some of their related family members.

3. The '630 Application, and the '643, '965, '051, '792, '172, '164 and '902 Patents teach, among other things, the use of a variety of materials to place a thin film encapsulating the fibers of a fabric.

4. Reading these patents, one of skill in the art in the field of fabric coating would understand that he or she could use a variety of materials to practice the claimed inventions. These materials include polymers, but can also include pre-polymers. For example, the '643 Patent teaches one of skill in the art that he or she can start with oligomeric or pre-polymeric materials (such as vinyl terminated siloxane and silanic hydrogen), mix the pre-polymers, apply them to the fabric, and then pass the fabric with the mixture of pre-polymers through an oven causing the mixture to polymerize through the curing process to then become a polymer composition. (*See* '643 Patent at Col. 3, ll. 40-46, ll. 59-61.) Similarly, Column 11 of the '643 Patent states, "[t]he curable silicone impregnant composition is believed to be typically polymeric, to be usually a mixture of co-curable polymers and oligomers, and to include a catalyst to promote the cure." (*See* '643 Patent at Col. 11, ll. 1-4.) This indicates that the inventor of the '643 Patent understood that one could encapsulate the '643 Patent with materials that were not necessarily polymers. Furthermore, the substances described in Table I of the '643 Patent are polymers that have been made from pre-polymer building blocks such as vinyl-terminated polydimethyl siloxane and a curing agent. (*See, e.g.*, '643 Patent at Col. 24, ll. 1-26.) Similarly, Table I also indicates that one can use a siloxane resin solution as an impregnant. (*See id.*) One of skill in the art would also have understood that a resin is not necessarily a polymer. Thus, one of skill in the art would have understood from reading the specification of the '643 Patent and the illustrative Silicone Polymer Compositions that he or she could have started with

a commercial pre-made polymer composition, or with a pre-polymer and a curing agent to practice the invention disclosed in the '643 Patent.

5. Similar disclosures to those I describe in paragraph 4 are also found in the patents leading to the '902 Patent. *See* the '965 Patent Col. 3, ll. 42-48, ll. 61-63; Col. 11, ll. 3-6; Col. 24, ll. 1-26; the '051 Patent Col. 3, ll. 42-48, ll. 61-63; Col. 11, ll. 3-6; Col. 24, ll. 8-33, the '172 Patent Col. 3, ll. 56-62; Col. 4, ll. 9-11; Col. 32, ll. 15-38, the '792 Patent Col. 4, ll. 9-10, 24-26; Col. 16, 36 – 41; Col. 18, 1-10; Col. 29, l. 56 – Col. 30, l; Col. 48, 34-37. 18, and the '164 Patent Col. 4, ll. 54-60; Col. 5, ll. 7-9; Col. 32, ll. 5-28.

6. It is well known that a large number of silicones are prepared by mixing multiple components to form silicone polymers. The components are often given the designation A and B and are often themselves made up of multiple components. Attached as Exhibit 1 is a true and correct copy of a pamphlet from Siltech LLC, a chemical supplier of coatings, which lists several high molecular weight silicone compounds as "pre-polymers." (*See, e.g.,* Ex. 1 at pp. 2, 5.). The materials in section 6 Silmer VIN (Silicone with vinyl functionality) and section 5 Silmer H (silicone with silanic hydrogen functionality) representative of the materials used by Nextec and designated part A and part B, respectively.

7. Furthermore, one of skill in the art would have understood that the pre-polymer and curing agent may not have formed a polymer until after application to fabric and entry of the fabric into the oven for curing. It was well known, before the filing date of the '630 Application that one could apply pre-polymers to a fabric and then polymerize the pre-polymers after application to the fabric – i.e., during the curing process. For example, I have applied acrylate monomers and pre-polymers to fabric for subsequent polymerization during electron

beam curing over thirty years ago. Urethanes and silicones can be applied as pre-polymers and then polymerized on the substrate.

8. Knowledge of the use of siloxanes to create polymers was not new at the time of invention of Nextec's patents. Attached as Exhibit 2 is a true and correct copy of an article by Connor, C.J. et al., "*New Silicone Alloy for Durable Water Repellency on Cotton*", Textile Research Journal, 1960; 30; 171. This article shows the polymerization of a commercially available vinyl siloxane to create polymers for use on fabrics.

9. Thus, one of skill in the art at the time the Nextec Patents were filed would have understood he or she could practice the invention of those patents using a pre-existing polymer that might further polymerize during curing, or could just as easily start with pre-polymeric materials (such as vinyl terminated siloxane and silanic hydrogen), mix the pre-polymers, apply them to the fabric, and then pass the fabric with the mixture of pre-polymers through an oven causing the mixture to polymerize through the curing process to become a polymer composition (such as those listed in Table I of the '643 Patent).

I declare under penalty of perjury under the federal law of the United States that the foregoing is true and correct. Executed on July 19, 2010, at Clemson, South Carolina.


Christine Cole